

Amendments to the Claims

This listing of claims will replace all prior listings of claims in the application.

Listing of Claims

Claims 1-10 (Cancelled).

11. (New) A device for producing an aerosol for use as a lubricant and coolant for a tool, in which an injector unit is configured to receive and mix a liquid flow from a liquid container and a transport gas flow from a gas supply through a transport gas flow line to form the aerosol in an aerosol chamber inside the liquid container above a level of liquid inside the liquid container, an aerosol line being provided from the liquid container for guiding the aerosol from the aerosol chamber to an aerosol discharge arranged in the region of the tool, comprising the improvement:

wherein the injector unit has a flow conducting means for the transport gas flow and the liquid flow which is configured to produce a sucking-in and atomizing function for the liquid flow when there occurs a pressure loss for the transport gas flow, said injector unit including means for causing a lower pressure loss of the transport gas flow than a minimum possible pressure loss set at the aerosol discharge by a high flow speed and at the same time a low volumetric flow at the atomizing location in the region of the injector unit;

wherein a first pressure sensing means is provided in the transport gas line that is configured to supply gas flow to the injector unit and in the region of the aerosol line;

wherein a second pressure sensing means is provided for measuring the pressure inside the liquid container and, consequently, the pressure of the aerosol in the aerosol line;

wherein a further gas flow line is connected in circuit with the transport gas flow line to said injection unit and

extends to the interior of said liquid container and the aerosol chamber; and

wherein a control unit includes a gas control device in the further gas flow line, said control unit being configured for controlling the gas control device to regulate a differential pressure between the pressure in the transport gas line and the pressure in the aerosol line depending on a comparison of actual pressure values sensed by the first and second pressure sensing means with set pressure differential values stored in a set-value memory on the basis of various parameters for different machining operations.

12. (New) The device according to Claim 11, wherein the injector unit has at least one channel portion for the transport gas flow and at least one channel region for the liquid flow, wherein the channel portion for the transport gas flow is configured as an annular channel concentrically surrounding the channel region for the liquid flow, the annular channel having an annular constriction, which together with an outer casing of the end region of the channel region for the liquid flow forms an annular gap, and wherein the control unit is configured to set a lower pressure loss of the transport gas flow than a minimum possible pressure loss at the aerosol discharge by a high flow speed and at the same time a low volumetric flow at the atomizing location in the region of the injector unit.

13. (New) The device according to Claim 12, wherein the channel portion for the transport gas flow of the injector unit narrows in a funnel-shaped manner in the direction of flow towards the annular constriction, and the injector unit has an aerosol chamber portion lying downstream of the end region that widens in a correspondingly funnel-shaped manner in the direction of flow.

14. (New) The device according to Claim 12, wherein the annular gap is configured with dimensioning of less than 0.5 mm in width.

15. (New) The device according to Claim 14, wherein the annular gap is configured with dimensioning of approximately 0.1 mm in width.

16. (New) The device according to Claim 12, wherein more than one injector unit is provided and wherein the control unit includes a control program which is configured (1) to activate at least one aerosol producer with different control commands and in each case performs differential pressure measurements by means of the first and second pressure sensing means, and (2) to compare the sensed actual values of the differential pressure measurements with corresponding set values of the set-value memory and finally select appropriate parameters from the set-value memory.

17. (New) The device according to Claim 16, wherein each of the injector units is supplied with gas flow and liquid flow through parallel connections, to which a control branch of the transport gas line that can be controlled by an actuating element is respectively connected, and wherein the control unit is configured to activate the actuating elements in such a way that at least one injector unit is permanently functioning.

18. (New) The device according to Claim 17, wherein the set memory is configured to have control defaults and wherein the activation of the actuating elements by the control unit takes place in dependence on the corresponding control defaults of the set-value memory.